

CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Canceled)

2. (Currently amended) The ~~apparatus~~ emitter location systems according to claim ~~[[1]]~~ 18, wherein the detected times of arrival are corrected for discrepancies, ~~that are caused by atmospheric refraction, by minimizing said residual path length.~~

3. (Canceled)

4. (Currently amended) The ~~apparatus~~ emitter location systems according to claim ~~[[3]]~~ 2, wherein said ~~determining means is arranged to:~~ a) ~~measure electromagnetic wave arrival time differences between pairs of said receivers,~~ b) ~~obtain an estimate of emitter position,~~ c) ~~for each receiver, using said estimate, obtain a ground range from said emitter to that receiver,~~ d) ~~use said ground range, a receiver height, and an assumed refractive profile in a selected ray-tracing integral equation to predict actual path length,~~ e) ~~obtain a path length difference between a predicted actual path length and a straight line path length of the estimated emitter position to form a correction to each of said electromagnetic wave arrival times,~~ and f) processor repeatedly obtain said

~~estimate of obtains the ground range from the emitter position, obtain said ground range, predict said actual path length, and obtain said path length difference until to repeatedly predict said bent path length, difference converges to a certain value.~~

5. (Currently amended) The ~~apparatus~~ emitter location systems according to claim ~~[[1]]~~ 18, wherein said ~~determining means is arranged to determine~~ processor determines a predicted actual path length R between the emitter and at least one of said ~~platforms~~ systems from a ray tracing equation

$$R = \int_{h_0}^{h_1} \frac{n(h)}{\sqrt{1 - \frac{n_0 \cos(\theta_0)}{n(h) \left[1 + \frac{h}{re}\right]^2}}} dh,$$

where $n(h)$ describes the atmospheric refractive profile as a function of height, n_0 is the refractive index at the earth surface, θ_0 is the take-off angle of the ray at the emitter, h_0 and h_1 are the start and end heights of the path, and re is the earth radius.

6. (Currently amended) The ~~apparatus~~ emitter location systems according to claim 5, ~~including further comprising~~ a Kalman filter for improving correction of said detected times.

7-17. (Canceled)

18. (New) A plurality of emitter location systems for locating an emitter of electromagnetic waves, comprising:

radar antennas,

receivers, each receiver detecting a time of arrival of said electromagnetic waves at said receiver,

controllers,

transceivers, and

a processor for minimizing a residual path length due to differences in path bending from electromagnetic wave time differences of arrival for at least three pairs of emitter location systems by assuming straight-line paths and, for each emitter location system, using an algorithm to obtain a three dimensional estimate of emitter position, obtaining a ground range from the emitter to a respective receiver, and using the ground range, emitter location system height, and an assumed refractive profile to predict a bent path length.